

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A process for the hydrogenation and/or asymmetric hydrogenation of an imine of Formula (I) to an amine of Formula (II) and/or its other enantiomer:



wherein

R<sup>1</sup> is selected from the group consisting of aryl and heteroaryl, which two groups are optionally substituted;

R<sup>2</sup> is selected from the group consisting of hydrogen, aryl, heteroaryl, C<sub>1-10</sub>alkyl, C<sub>2-10</sub>alkenyl, C<sub>2-10</sub>alkynyl, C<sub>3-10</sub>cycloalkyl, C<sub>3-10</sub>cycloalkenyl and C<sub>3-10</sub>heterocyclo, which latter eight groups are optionally substituted; and

R<sup>3</sup> is selected from the group consisting of optionally substituted C<sub>1</sub> to C<sub>2</sub> alkyl, and optionally substituted C<sub>3-10</sub>cycloalkyl and -CH<sub>2</sub>-C=C-R<sup>6</sup>, in which R<sup>6</sup> is selected from the group consisting of H, aryl, C<sub>1-10</sub>alkyl, C<sub>2-10</sub>alkenyl, C<sub>2-10</sub>alkynyl, C<sub>3-10</sub>cycloalkyl and C<sub>3-10</sub>cycloalkenyl, which latter six groups are optionally substituted;

or R<sup>1</sup> and R<sup>2</sup> or R<sup>2</sup> and R<sup>3</sup> are linked to form an optionally substituted ring;

wherein the optional substituents of R<sup>1</sup> and R<sup>2</sup> are independently selected from one or more of the group consisting of halo, NO<sub>2</sub>, OR<sup>4</sup>, NR<sup>4</sup><sub>2</sub> and R<sup>4</sup>, in which R<sup>4</sup> is independently selected from one or more of the group consisting of hydrogen, aryl,

C<sub>1-6</sub>alkyl, C<sub>2-6</sub>alkenyl, C<sub>3-6</sub>cycloalkyl and C<sub>3-6</sub>cycloalkenyl;

the optional substituents of R<sup>3</sup> and R<sup>6</sup> are independently selected from one or more of the group consisting of halo, NO<sub>2</sub>, OR<sup>5</sup>, NR<sup>5</sup><sub>2</sub> and R<sup>5</sup>, in which R<sup>5</sup> is independently selected from the group consisting of C<sub>1-6</sub>alkyl, C<sub>2-6</sub>alkenyl and C<sub>2-6</sub>alkynyl; and

R<sup>1</sup> is selected from the group consisting of aryl and heteroaryl, which two groups are optionally substituted;—

R<sup>2</sup> is selected from the group consisting of hydrogen, aryl, heteroaryl, C<sub>1-10</sub>alkyl, C<sub>2-10</sub>alkenyl, C<sub>2-10</sub>alkynyl, C<sub>3-10</sub>cycloalkyl, C<sub>3-10</sub>cycloalkenyl and C<sub>3-10</sub>heterocyclo, which latter eight groups are optionally substituted; and

R<sup>3</sup> is selected from the group consisting of optionally substituted C<sub>1</sub> to C<sub>2</sub>-alkyl and optionally substituted C<sub>3-10</sub>cycloalkyl;

or R<sup>1</sup> and R<sup>2</sup> or R<sup>2</sup> and R<sup>3</sup> are linked to form an optionally substituted ring;

wherein the optional substituents of R<sup>1</sup> and R<sup>2</sup> are independently selected from one or more of the group consisting of halo, NO<sub>2</sub>, OR<sup>4</sup>, NR<sup>4</sup><sub>2</sub> and R<sup>4</sup>, in which R<sup>4</sup> is independently selected from one or more of the group consisting of hydrogen, aryl,

C<sub>1-6</sub>alkyl, C<sub>2-6</sub>alkenyl, C<sub>3-6</sub>cycloalkyl and C<sub>3-6</sub>cycloalkenyl;

one or more of the carbon atoms in the alkyl, alkenyl and/or alkynyl groups of R<sup>1</sup>, R<sup>2</sup> and/or R<sup>3</sup> is optionally replaced with a heteroatom selected from the group consisting of O, S, N, O and Si, which, where possible, is optionally substituted with one or more C<sub>1-6</sub>alkyl groups;

said process comprising the steps of reacting imines of Formula (I) in the presence of H<sub>2</sub>, a base and a catalytic system in which the catalytic system comprises a base and a ruthenium complex comprising (1) a diamine and (2) a diphosphine ligand or monodentate phosphine ligand.

2. (Cancelled Herein)

3. (Original) The process according to claim 1, wherein the amine of Formula (II) or its opposite enantiomer, is produced in enantiomerically enriched form.

4. (Cancelled Herein)

5. (Previously Amended) The process according to claim 1, wherein R<sup>1</sup> is optionally substituted aryl.
6. (Original) The process according to claim 5, wherein R<sup>1</sup> is optionally substituted phenyl,
7. (Original) The process according to claim 6, wherein R<sup>1</sup> is unsubstituted phenyl.
8. (Previously Amended) The process according to claim 5, wherein R<sup>2</sup> is selected from the group consisting of hydrogen, aryl, C<sub>1-6</sub>alkyl, C<sub>2-6</sub>alkenyl, C<sub>2-6</sub>alkynyl, C<sub>3-6</sub>cycloalkyl and C<sub>3-6</sub>cycloalkenyl, which latter six groups are optionally substituted.
9. (Original) The process according to claim 8, wherein R<sup>2</sup> is selected from the group consisting of hydrogen, aryl and C<sub>1-6</sub>alkyl, which latter two groups are optionally substituted.
10. (Original) The process according to claim 9, wherein R<sup>2</sup> is selected from the group consisting of hydrogen, phenyl, and C<sub>1-6</sub>alkyl, which latter two groups are optionally substituted.
11. (Original) The process according to claim 10, wherein R<sup>2</sup> is selected from the group consisting of hydrogen, unsubstituted phenyl and methyl.
12. (Previously Amended) The process according to claim 5, wherein R<sup>3</sup> is selected from the group consisting of optionally substituted C<sub>1</sub> to C<sub>2</sub> alkyl and optionally substituted C<sub>3-6</sub>cycloalkyl.
13. (Original) The process according to claim 12, wherein R<sup>3</sup> is methyl, ethyl, i-propyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl, which latter four groups are unsubstituted.

14. (Previously Amended) The process according to claim 1, wherein  $R^2$  and  $R^3$ , including the atoms to which they are attached, are linked to form an optionally substituted 5- or 6-membered ring.

15. (Original) The process according to claim 14, wherein  $R^2$  and  $R^3$ , including the atoms to which they are attached, are linked to form an unsubstituted 5- or 6-membered ring.

16. (Previously Amended) The process according to claim 5, wherein the optional substituents for  $R^1$  and  $R^2$  in the compounds of Formula I, are independently selected from one or more of the group consisting of halo,  $NO_2$ ,  $OR^4$ ,  $NR^4_2$  and  $R^4$ , in which  $R^4$  is independently selected from one or more of the group consisting of hydrogen, aryl and  $C_{1-4}$ alkyl, and the optional substituents of  $R^3$  are independently selected from one or more of the group consisting of halo,  $NO_2$ ,  $OR^5$ ,  $NR^5_2$  and  $R^5$ , in which  $R^5$  is independently selected from the group consisting of  $C_{1-4}$ alkyl.

17. (Original) The process according to claim 16, wherein the optional substituents for  $R^1$  and  $R^2$  in the compounds of Formula I, are independently selected from one or more of the group consisting of halo,  $NO_2$ , OH,  $OCH_3$ ,  $NH_2$ ,  $N(CH_3)_2$ ,  $CH_3$  and phenyl and the optional substituents of  $R^3$  are independently selected from one or more of the group consisting of halo,  $NO_2$ , OH,  $OCH_3$ ,  $NH_2$ ,  $N(CH_3)_2$  and  $CH_3$ .

18. (Previously Amended) The process according to claim 5, wherein one to three of the carbon atoms in the alkyl, alkenyl and/or alkynyl groups of  $R^1$ ,  $R^2$  and/or  $R^3$  is optionally replaced with a heteroatom selected from the group consisting of O, S, N, NH and N- $CH_3$ .

19. (Original) The process according to claim 18, wherein suitably one of the carbon atoms in the alkyl, alkenyl and/or alkynyl groups of  $R^1$ ,  $R^2$  and/or  $R^3$  is optionally replaced with a heteroatom selected from the group consisting of O, S, N, NH and N- $CH_3$ .

20-24. (Cancelled Herein)

25. (Currently Amended) The process according to claim 1 [[20]], wherein  $R^6$  is selected from the group consisting of H, aryl,  $C_{1-6}$ alkyl,  $C_{2-6}$ alkenyl,  $C_{2-6}$ alkynyl,  $C_{3-6}$ cycloalkyl and  $C_{3-6}$ cycloalkenyl, which latter six groups are optionally substituted.

26. (Original) The process according to claim 25, wherein  $R^6$  is selected from the group consisting of H and  $C_{1-4}$ alkyl.

27. (Original) The process according to claim 26, wherein  $R^6$  is H.

28. (Currently Amended) The process according to claim 25 [[20]], wherein the optional substituents for  $R^4$ ,  $R^6$  and  $R^6$ , are independently selected from one or more of the group consisting of halo,  $NO_2$ ,  $OR^5$ ,  $NR^5_2$  and  $R^5$ , in which  $R^5$  is independently selected from one or more of the group consisting of  $C_{1-4}$ alkyl.

29. (Currently Amended) The process according to claim 28, wherein the optional substituents for  $R^4$ ,  $R^6$  and  $R^6$  in the compounds of Formula III, are independently selected from one or more of the group consisting of halo,  $NO_2$ , OH,  $OCH_3$ ,  $NH_2$ ,  $N(CH_3)_2$  and  $CH_3$ ,

30. (Currently Amended) The process according to claim 25 [[20]], wherein one to three, of the carbon atoms in the alkyl, alkenyl and/or alkynyl groups of  $R^4$ ,  $R^6$  and/or  $R^6$  is optionally replaced with a heteroatom selected from the group consisting of O, S, N, NH and  $N-CH_3$ .

31. (Currently Amended) The process according to claim 30, wherein one of the carbon atoms in the alkyl, alkenyl and/or alkynyl groups of  $R^4$ ,  $R^6$  and/or  $R^6$  is optionally replaced with a heteroatom selected from the group consisting of O, S, N, NH and  $N-CH_3$ .

32. (Previously Amended) The process according to claim 1, wherein said ruthenium complex has the general Formula  $\text{RuXY}(\text{PR}_3)_2(\text{NH}_2\text{-Z-NH}_2)$  (III) or  $\text{RuXY}(\text{R}_2\text{P-Q-PR}_2)(\text{NH}_2\text{-Z-NH}_2)$  (IV), where Z and Q represent a chiral or achiral linker; the ancillary ligands  $\text{PR}_3$  and  $\text{R}_2\text{P-Q-PR}_2$  represent monodentate and bidentate phosphines, respectively; and the ligands X and Y represent an anionic ligand.

33. (Original) The process according to claim 32, wherein the ligand  $\text{PR}_3$ :



represents a chiral or achiral monodentate phosphine ligand in which R is simultaneously or independently selected from the group consisting of optionally substituted linear and branched alkyl containing 1 to 8 carbon atoms, optionally substituted linear and branched alkenyl containing 2 to 8 carbon atoms, optionally substituted cycloalkyl, optionally substituted aryl, OR and  $\text{NR}_2$ ; or two R groups bonded to the same P atom are bonded together to form a ring having 5 to 8 atoms and including the phosphorous atom to which said R groups are bonded.

34. (Original) The process according to claim 32, wherein the ligand  $\text{R}_2\text{P-Q-PR}_2$ :



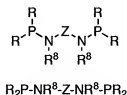
represents a bidentate ligand in which R is simultaneously or independently selected from the group consisting of optionally substituted linear and branched alkyl containing 1 to 8 carbon atoms, optionally substituted linear and branched alkenyl containing 2 to 8 carbon atoms, optionally substituted cycloalkyl, optionally substituted aryl, OR and  $\text{NR}_2$ ; or two R groups bonded to the same P atom are bonded together to form a ring having 5 to 8 atoms and including the phosphorous atom to which said R groups are bonded;

and Q is selected from the group consisting of linear and cyclic C<sub>2</sub>-C<sub>7</sub> alkylene, optionally substituted metallocenediyl and optionally substituted C<sub>6</sub>-C<sub>22</sub> arylene.

35. (Original) The process according to claim 34, wherein the ligand R<sub>2</sub>P-Q-PR<sub>2</sub> is chiral and includes atropisomeric bis-tertiary phosphines, in which the two phosphorus atoms are linked by a biaryl backbone.

36. (Original) The process according to claim 35, wherein the ligand R<sub>2</sub>P-Q-PR<sub>2</sub> is selected from the group consisting of BINAP, BIPHEP and BIPHEMP.

37. (Original) The process according to claim 32, wherein the bidentate phosphine is a chiral or achiral ligand of the type R<sub>2</sub>P-NR<sup>8</sup>-Z-NR<sup>8</sup>-PR<sub>2</sub>:



wherein each R, taken separately, is independently selected from the group consisting of optionally substituted linear and branched alkyl containing 1 to 8 carbon atoms, optionally substituted linear and branched alkenyl containing 2 to 8 carbon atoms, optionally substituted cycloalkyl, optionally substituted aryl, OR and NR<sub>2</sub>; or two R groups bonded to the same P atom are bonded together to form a ring having 5 to 8 atoms and including the phosphorous atom to which said R groups are bonded; each R<sup>8</sup>, taken separately, is independently selected from the group consisting of hydrogen, optionally substituted linear and branched alkyl and alkenyl containing 1 to 8 carbon atoms, optionally substituted cycloalkyl, optionally substituted aryl, OR and NR<sub>2</sub>; and Z is optionally substituted linear and cyclic C<sub>2</sub>-C<sub>7</sub> alkylene, optionally substituted metallocenediyl and optionally substituted C<sub>6</sub>-C<sub>22</sub> arylene.

38. (Original) The process according to claim 37, wherein the ligand R<sub>2</sub>P-NR<sup>8</sup>-Z-NR<sup>8</sup>-PR<sub>2</sub> is selected from the group consisting of DPPACH and DCYPACH.

39. (Previously Amended) The process according to claim 1, wherein the diamine ligand has the Formula  $\text{NH}_2\text{-Z-NH}_2$ :



wherein Z is selected from the group consisting of optionally substituted linear and cyclic  $\text{C}_2\text{-C}_7$  alkylene, optionally substituted metallocenediyl and optionally substituted  $\text{C}_6\text{-C}_{22}$  arylene.

40. (Original) The process according to claim 39, wherein the diamine ligand is chiral and includes (1) compounds in which at least one of the amine-bearing centers is stereogenic, (2) compounds in which both of the amine-bearing centers are stereogenic and (3) atropisomeric bis-tertiary diamines, in which the two nitrogen atoms are linked by a biaryl backbone.

41. (Original) The process according to claim 39, wherein the diamine ligand  $\text{NH}_2\text{-Z-NH}_2$  is selected from the group consisting of CYDN and DPEN.

42. (Previously Amended) The process according to claim 1, wherein the diamine is a bidentate ligand of the Formula  $\text{D-Z-NHR}^9$  in which Z is selected from the group consisting of optionally substituted linear and cyclic  $\text{C}_2\text{-C}_7$  alkylene, optionally substituted metallocenediyl and optionally substituted  $\text{C}_6\text{-C}_{22}$  arylene; D is an amido group donor or a chalcogenide radical selected from the group consisting of O, S, Se and Te;  $\text{NHR}^9$  is an amino group donor in which  $\text{R}^9$  is selected from the group consisting of hydrogen, optionally substituted linear and branched alkyl and alkenyl containing 1 to 8 carbon atoms, optionally substituted cycloalkyl and optionally substituted aryl.

43. (Original) The process according to claim 42, wherein D is  $\text{NR}^{10}$ , wherein  $\text{R}^{10}$  is selected from the group consisting of  $\text{S(O)}_2\text{R}^{10}$ ,  $\text{P(O)}(\text{R}^{10})_2$ ,  $\text{C(O)}\text{R}^{10}$ ,  $\text{C(O)}\text{N}(\text{R}^{10})_2$  and



$C(S)N(R^{10})_2$ , in which  $R^{10}$  is independently selected from the group consisting of hydrogen, optionally substituted linear and branched alkyl and alkenyl containing 1 to 8 carbon atoms, optionally substituted cycloalkyl and optionally substituted aryl.

44. (Original) The process according to claim 42, wherein the diamine is chiral and includes (1) compounds in which the amine-bearing center is stereogenic, (2) compounds in which both the donor-bearing (D) and amine-bearing centers are stereogenic.

45. (Original) The process according to claim 44, wherein the diamine is  $CH_3C_6H_4SO_3NCHPhCHPhNH_2$ .

46. (Previously Amended) The process according to claim 1, wherein the ligands X and Y is selected from the group consisting of Cl, Br, I, H, hydroxy, alkoxy and acyloxy.

47. (Previously Amended) The process according to claim 1, wherein the base is an alcoholate or an hydroxide salt selected from the group consisting of compounds of the Formula  $(R^{12}O)_2M'$  and  $R^{12}OM''$ , in which  $M'$  is an alkaline-earth metal,  $M''$  is an alkaline metal and  $R^{12}$  is selected from the group consisting of hydrogen,  $C_1$  to  $C_8$  linear and branched alkyl.

48. (Previously Amended) The process according to claim 1, wherein the base is an organic non-coordinating base.

49. (Original) The process according to claim 48, wherein the base is selected from the group consisting of DBU,  $NR_3$  and phosphazene.

50. (Previously Amended) The process according to claim 1, wherein the hydrogenation is carried out in the absence of a solvent.

51. (Previously Amended) The process according to claim 1, wherein the hydrogenation reaction is carried out in the presence of a solvent.

52. (Original) The process according to claim 51, wherein the solvent is selected from the group consisting of benzene, toluene, xylene, hexane, cyclohexane, tetrahydrofuran, primary and secondary alcohols, and mixtures thereof.

53. (Original) The process according to claim 51, wherein the hydrogenation is carried out in an amine solvent.

54-56. (Cancelled Herein)